

What is claimed is:

$$\begin{array}{c}
 X_1^- \quad R_3R_2R_1^+N-Alk_1 \\
 | \\
 N-Alk_2 \\
 | \\
 X_1^- \quad R_3R_2R_1^+N-Alk_2
 \end{array}
 \begin{array}{c}
 HC-Ar_2-CH \\
 || \quad || \\
 CH \quad HC
 \end{array}
 \begin{array}{c}
 Ar_1 \\
 | \\
 N-Alk_3-N^+R_1R_2R_3 \quad X_1^- \\
 | \\
 N-Alk_4-N^+R_1R_2R_3 \quad X_1^-
 \end{array}$$

(I)

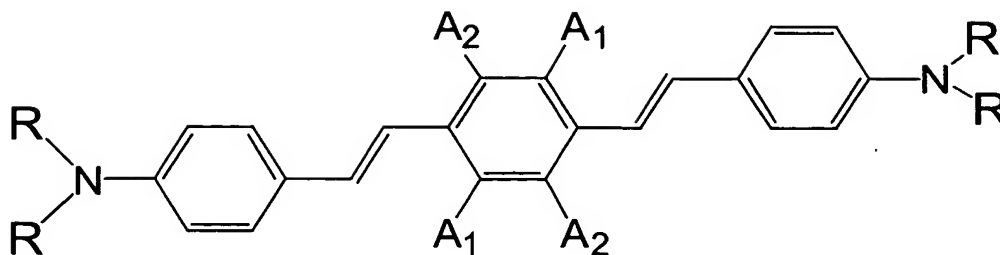
2. The chromophore of claim 1 wherein Ar₁, Ar₂ and Ar₃ are single aromatic rings.

3. The chromophore of claim 2 wherein Ar₁, Ar₂ and Ar₃ are benzene rings.

4. The chromophore of claim 1 wherein Ar₂ includes a donor or acceptor group.

5. The chromophore of claim 1 wherein Ak₁, Ak₂, Ak₃ and Ak₄ are each (CH₂)_n, where n is from 1 to 10, and R₁, R₂ and R₃ are each CH₂)_m-H, where m is from 1 to 10.

6. A distyrylbenzene chromophore having the following structural formula (II):



(II)

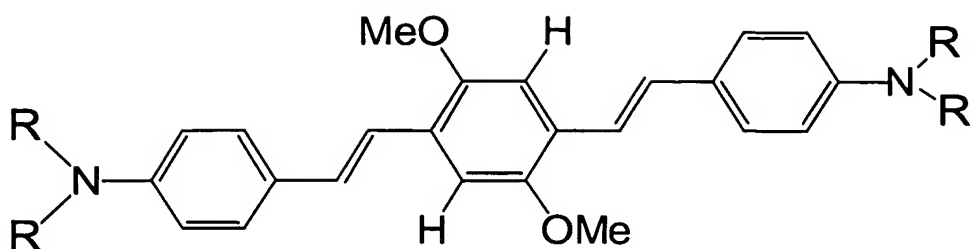
wherein A_1 and A_2 are each independently a hydrogen, or a donor or acceptor group; and R is $[(CH_2)_n]_6-NR'_3X$, where R' is $(CH_2)_m-H$, X is any anion, n is from 1 to 10 and m is from 1 to 10.

7. The chromophore of claim 6 in which the donor group is selected from the group consisting of I, Br, Cl, $OC(O)R''$, SH, OH, SR'' , OR'' , $NHC(O)R''$, NH_2 , $NH''R$, S^- , and O, where R'' refers to an alkyl group containing 1-50 carbon atoms.

8. The chromophore of claim 6 in which the acceptor group is selected from the group consisting of F, $C(O)NR''_2$, $C(O)NHR''$, $C(O)NH_2$, $C(O)OR''$, $C(O)OH$, $C(O)R''$, $C(O)H$, CN, $S(O_2)R''$, and NO_2 , and where R'' refers to an alkyl group containing 1-50 carbon atoms.

9. The chromophore of claim 6 in which A_1 and A_2 are each hydrogen and $n = 1$.

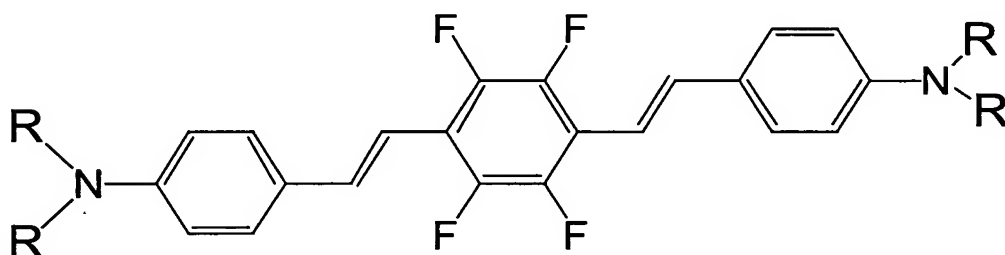
10. A distyrylbenzene chromophore having the following structural formula (III):



(III)

wherein R is $(\text{CH}_2)_6\text{-NR}'_3\text{X}$, R' is CH_3 , and X is any anion.

11. A distyrylbenzene chromophore having the following structural formula (IV):



(IV)

wherein R is $(\text{CH}_2)_6\text{-NR}'_3\text{X}$, R' is CH_3 and X is any anion.

12. A method of preparing a distyrylbenzene chromophore, comprising reacting a 1,4-dibenzylphosphonate with a haloalkylamino-benzaldehyde and adding a trialkylamine by condensation to said distyrylbenzene chromophore whereby to provide water solubility to said chromophore.

13. The method of claim 12 in which said haloalkylamino-benzaldehyde is a N,N-bis-(6-iodoalkyl)-4-amino-benzaldehyde where the alkyl group has from 1 to 10 carbon atoms.

14. The method of claim 13 in which said N,N-bis-(6-iodohexyl)-4-amino-benzaldehyde is prepared by reacting N,N-bis-(6-hydroxyhexyl)-benzaldehyde with phosphorous oxychloride.

15. The method of claim 14 in which said N,N-bis-(6-hydroxyhexyl)-benzaldehyde is prepared by reacting aniline and 6-chloro-1-hexanol with a carbonate.

16. A method of preparing a water-soluble two-photon absorbing distyrylbenzene chromophore, comprising the following reaction:

